



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,128	07/18/2003	Sridhar Srinivasan	3382-66127	4493
26119 7590 04/03/2007 KLARQUIST SPARKMAN LLP 121 S.W. SALMON STREET SUITE 1600 PORTLAND, OR 97204			EXAMINER PERUNGAVOOR, SATHYANARAYA V	
			ART UNIT	PAPER NUMBER
			2624	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/03/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/623,128

Applicant(s)

SRINIVASAN ET AL.

Examiner

Sath V. Perungavoor

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 8/8/05; 10/20/05; 9/11/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### **Information Disclosure Statement**

[1] The information disclosure statement filed August 8, 2005 is missing a copy of a NPL document, indicated by cross out, which has not been considered.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows (emphasis added):

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

[2] Regarding claim 8, the claimed invention is directed to a non-statutory subject matter. The “computer readable medium” defined in claim 8 is referred to in the specification as encompassing a communication media, which is also defined in the specification as being a modulated data signal (see spec. pages 5-6). A modulated data signal does not fall into one of the statutory categories as defined in 35 USC 101, hence it is non-statutory subject matter.

- Modifying the term “computer readable medium” to “computer readable storage medium” would resolve this issue.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

[3] Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim<sup>i</sup>.

Regarding claim 1, Kim meets the claim limitations, as follows:

A method of reducing blocking artifacts in video compression [fig. 4], comprising:  
for a block edge segment (*i.e. block boundary*) of a block portion of the video where  
the block edge segment has a length of plural pixels (*i.e. 8 pixels*), sampling an edge  
strength measure (*i.e. 409S*,  $|MAX-MIN| < 2 \cdot QP$ ) at a subset of pixel locations (*i.e. single row*) less than all pixel (*i.e. 8 rows*) locations along the block edge segment's  
length (*i.e. 8 pixels*) [figs. 2 and 4]; determining (*i.e. 409S*) whether to filter the block  
edge segment based on the sampled edge strength measure [fig. 4]; filtering (*i.e. 410S*)  
the block edge segment conditioned (*i.e. YES*) on the determination [fig. 4].

Regarding claim 8, all claimed limitations are set forth and rejected as per discussion for  
claim 1.

[4] Claims 2 and 4-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Sun<sup>ii</sup> et al.  
("Sun").

Regarding claim 2, Sun meets the claim limitations, as follows:

A method of reducing blocking artifacts in video compression [figs. 1 and 8],  
comprising: evaluating a deblocking filter condition (*i.e. block strength*) for a block edge  
between two blocks in a frame of the video based at least in part on a frame type (*i.e. 200*), motion vectors of the blocks (*i.e. 208*), and non-zero residual error (*i.e. 204*) [fig.

8; paras. 0035-0037]; determining whether to filter (*i.e.* B) the block edge dependent at least in part upon the evaluation [fig. 8; para. 0038]; and if determined to filter the block edge, applying a deblocking filter to the block edge [fig. 8; para. 0038].

Regarding claim 4, Sun meets the claim limitations, as follows:

A method of reducing blocking artifacts in video compression [figs. 1 and 8], comprising: determining whether to apply a deblocking filter (*i.e.* block strength) to a block edge between two blocks in a frame of the video based at least in part on the blocks' types (*i.e.* 200), whether the blocks are inter-frame or intra-frame coded, and the blocks' coded block pattern (*i.e.* 204) [fig. 8; paras. 0035-0037]; if determined to filter the block edge, applying a deblocking filter to the block edge [fig. 8; para. 0038].

Regarding claim 5, Sun meets the claim limitations, as follows:

The method of claim 4 wherein the code block patterns of the blocks are indicative of whether the blocks contain non-zero transform coefficients (*i.e.* non-zero coefficients), and the determining whether to apply the deblocking filter (*i.e.* block strength) based on the coded block pattern is based on the coded block patterns of the blocks indicating the blocks contain non-zero transform coefficients [para. 0036].

Regarding claim 6, Sun meets the claim limitations, as follows:

The method of claim 4 wherein the determining whether to apply the deblocking filter comprises determining to apply the deblocking filter unless the blocks' have

matching types (*i.e. no on 208*), the blocks are not intra-coded (*i.e. no on 200*), and the coded block patterns are zero (*i.e. no on 204*) [fig. 8].

Regarding claim 7, Sun meets the claim limitations, as follows:

A digital video signal processing system [fig. 5] comprising: a video encoder/decoder (*i.e. 60*) [fig. 5]; an in-loop deblocking filter (*i.e. 78 and 90*) in the video encoder/decoder (*i.e. 60*) [fig. 5]; and a deblocking condition evaluator (*i.e. block strength*) for controlling application of the in-loop deblocking filter to an encoded block within a frame of video according to an evaluation of a deblocking condition based at least in part upon a frame type (*i.e. 200*), motion vectors of the block (*i.e. 208*), and residual error of the blocks being non-zero (*i.e. 204*) [fig. 8; paras. 0035-0037].

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[5] Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of Kim.

Regarding claim 3, Sun discloses the claim limitations as set forth in claim 2.

Sun does not explicitly disclose the following claim limitations:

The method of claim 2 further comprising: sampling an edge strength measure at locations less than a full length of the block edge; and further basing the determination of whether to filter the block edge based on the sampled edge strength measure.

However, in the same field of endeavor Kim discloses the deficient claim limitations, as follows:

A method of reducing blocking artifacts in video compression [fig. 4], comprising: sampling an edge strength measure (*i.e.* 409S,  $|MAX-MIN| < 2.QP|$ ) at locations (*i.e.* single row) less than a full length (*i.e.* 8 rows) of the block edge (*i.e.* block boundary) [figs. 2 and 4]; and further basing the determination of whether to filter (*i.e.* 409S) the block edge based on the sampled edge strength measure [fig. 4].

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Sun with Kim to include an edge strength condition before deblocking, the motivation being to remove blocking artifacts in only the smooth regions [col. 2, ll. 45-47; col. 5, ll. 55-60].

### **Contact Information**

[6] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Sath V. Perungavoor whose telephone number is (571) 272-7455. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Matthew C. Bella whose telephone number is (571) 272-7778, can be reached on Monday to

Art Unit: 2624

Friday from 9:00am to 5:00pm. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dated: March 30, 2007

---

Matthew C. Bella  
Sath V. Perungavoor  
Telephone: (571) 272-7455



---

<sup>i</sup> US 6,240,135 B1  
<sup>ii</sup> US 2003/0053541 A1

MATTHEW C. BELLA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600